

Claims

1. A method of derivatising a polymeric material of a type which includes encapsulated water, the method
5 comprising:

- (a) selecting a first hydrated polymeric material which includes encapsulated water;
- 10 (b) reducing the level of encapsulated water in said first hydrated polymeric material to produce a second polymeric material;
- (c) treating said second polymeric material with derivatisation means for derivatising said second polymeric material.

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2. A method according to claim 1, wherein the difference between the wt% of water in said first polymeric material and that in said second polymeric material is at least 40wt% and said second polymeric material includes less
20 than 10wt% of encapsulated water.

3. A method according to claim 1 or claim 2, wherein said first hydrated polymeric material comprises a third polymeric material which is cross-linked by a cross-
25 linking means.

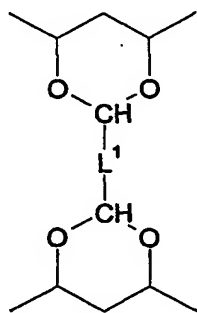
4. A method according to any preceding claim, wherein said first polymeric material is prepared by selecting a third polymeric material and treating it with a said
30 cross-linking means, wherein said third polymeric material includes functional groups selected from hydroxyl, carboxylic acid, carboxylic acid derivatives and amine groups.

5. A method according to claim 3 or claim 4, wherein said third polymeric material is a polyvinyl polymer.

6. A method according to any of claims 3 to 5, wherein said third polymeric material is polyvinylalcohol.

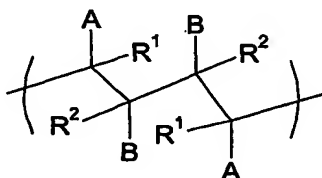
7. A method according to any preceding claims, wherein said first polymeric material comprises cross-linked polyvinylalcohol.

8. A method according to any preceding claim, wherein said first polymeric material includes a moiety of formula I



wherein L^1 is a residue of said cross-linking material.

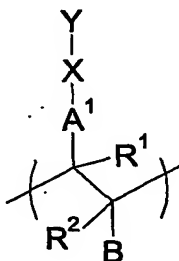
9. A method according to claim 3 or claim 4, wherein said cross-linking means comprises a fourth polymeric material which includes a repeat unit of formula



wherein A and B are the same or different, are selected from optionally-substituted aromatic and heteroaromatic groups and at least one comprises a relatively polar atom or group and R¹ and R² independently comprise relatively non-polar atoms or groups.

10. A method according to claim 9, wherein A and B are different, are selected from optionally-substituted aromatic and heteroaromatic groups and at least one of A or B comprises a relatively polar atom or group, R¹ and R² independently comprise relatively non-polar atoms or groups.

11. A method according to any preceding claim, wherein said first polymeric material includes a moiety of formula



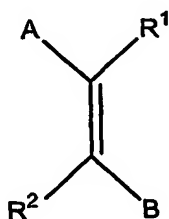
wherein R¹, R² and B are as described in claims 9 and 10, A¹ represents a residue of group A described in claims 9 and 10 after the reaction involving said third and fourth polymeric materials, Y represents a residue of said fourth polymeric material after said reaction involving said third and fourth polymeric materials and X represents a linking atom or group extending between the residues of said third and fourth polymeric materials.

12. A method according to any preceding claim, wherein, in step (b), drying is undertaken at a temperature in the range 10°C to 60°C.

5 13. A method according to any preceding claim, wherein, in step (c), said second polymeric material is derivatised in a first derivatisation step wherein said second polymeric material is treated with a first derivatisation material which reacts with said second polymeric material wherein
10 said reaction is carried out in the presence of less than 5wt% water and is carried out in an organic solvent.

14. A method according to claim 13, wherein said first derivatisation material includes one or more carbonyl,
15 carboxyl, hydroxyl, epoxy, halogen or amino functional groups.

15. A method according to claim 13 or claim 14, wherein said first derivatisation material is selected from
20 compounds of general formula



wherein A, B, R¹ and R² are as described in claims 9
25 and/or 10.

16. A method according to any preceding claim, wherein derivatisation of the second polymeric material includes one or more derivatisation steps arranged to introduce a

linking moiety on said second polymeric material, wherein the linking moiety is arranged to link the second polymeric material to an active moiety.

5 17. A method according to claim 16, wherein the active moiety is biocompatible.

18. A method according to claim 16 or claim 17, wherein said active material is selected from amino acid
10 containing moieties, peptides, proteins, conducting polymers, and organic semi-conductors or said active moiety may be part of a sensor for monitoring cell chemistry or biology.

15 19. A method according to any preceding claim, which involves increasing the level of encapsulated water at some stage after step (b).

20 20. A method of making a polymeric material, the method comprising:

(a) selecting a fifth polymeric material which comprises:

25 (i) a third polymeric material as described in claims 3 to 6 cross-linked by a fourth polymeric material as described in claims 9 or 10; or

(ii) a polymeric material which includes a moiety of formula VI as described in claim 11; and

30 (b) treating said fifth polymeric material with derivatisation means for derivatising said fifth polymeric material.

21. A derivatised polymeric material prepared or preparable in a method according to any of claims 1 to 19.

22. A method of preparing a material for a biological application, the method comprising forming micro-topographical features in a surface of a first, second or fifth polymeric material according to any preceding claim.

23. A polymeric material selected from said first, second or fifth polymeric materials or a hydrogel according to any preceding claim having micro topographical features.

24. A wound care product comprising a derivatised polymeric material or hydrogel according to any preceding claim.

25. A method of treatment of the human or animal body, the method comprising positioning a derivatised polymeric material, hydrogel or wound care product according to any preceding claim on or adjacent an area to be treated.

26. The use of a polymeric material or hydrogel according to any preceding claim for the manufacture of a material for treatment of damaged and/or diseased tissues and/or wounds.